

applicant contends that such terms are definite. In addition, claims 9 and 30 have been amended to recite that the metal is 99.999% pure aluminum. In addition, claim 26 states that the surface is "essentially aluminum".

The Examiner rejected claims 1, 2, 7, 25, and 31 under 35 USC § 102 as being anticipated by Hills et al. The Examiner stated that Hills et al. teaches improving the etch uniformity of a plasma process by using a ring (124) and that the ring has a surface which is even and parallel to the surface of the substrate (110) and that the ring surrounds the substrate and is made of aluminum (col. 5, lines 60-66).

Hills et al. does not disclose the simultaneous etching of the ring (124) and the substrate, as recited in claims 1 and 25. The Examiner failed to point out anything in Hills et al. that discloses that the ring (124) is etched. In addition, the Examiner cited col. 5, lines 60-66, of Hills et al. as stating that ring (124) is anodized aluminum. The cited passage states that the "pedestal focus ring" (114), the "gas distribution plate" (170), the "gas distribution ring" (172), and their component parts are made of anodized aluminum. Anodized aluminum has an aluminum oxygen combination surface, and therefore is not pure or substantially pure aluminum as recited in claims 1 and 25. In addition, ring 124 is not the "pedestal focus ring" (114), the "gas distribution plate" (170), the "gas distribution ring" (172), or one of their component parts. Instead ring 124 is a supporting annulus. For these reasons, claims 1 and 25 are not anticipated by Hills et al.

Claim 2 is dependent on claim 1. Claim 2 further recites that the sacrificial etch portion represents a ring surrounding the wafer. Since ring (124) is not a sacrificial etch portion, it cannot disclose a sacrificial etch portion that surrounds the wafer. For these reasons, claim 2 is not anticipated by Hills et al.

Claim 7 is dependent on claim 1, and for this reason is not anticipated by Hills et al.

Claim 31 is dependent on claim 25, and for this reason is not anticipated by Hills et al.

The Examiner rejected claim 33 under 35 USC § 103 as being unpatentable over Hills et al. Claim 33 is dependent on claim 25. For this reason, claim 33 is not made obvious by Hills et al.

The Examiner rejected claims 4-6, 8-10, 26-30, and 32 under 35 USC § 103 as being unpatentable over Hills et al. in view of Abraham (5,772,906) and Abraham et al. (5,952,244). the Examiner stated that Hills does not recite specifically the claimed type of plasma apparatus, but that Abraham and Abraham et al. teach the claimed chambers and processes (aluminum etching using chlorine) and that it would have been obvious to expend the teaching of Hills et al. to any conventional plasma etching process.

Claim 4 is dependent on claim 1 and further recites that the sacrificial etch portion is pure aluminum. Since ring (124) is not a sacrificial etch portion, it cannot disclose a pure aluminum sacrificial etch portion. In addition, the Examiner failed to point out anything in Abraham or Abraham et al. that teaches having the recited ring and that the recited ring is a sacrificial ring made of pure aluminum. In addition, the enclosed declaration states that Hills et al. would not make obvious the sacrificial pure aluminum upper surface. The declaration goes on to state that since anodized aluminum is difficult to etch, such a surface be an unlikely sacrificial upper surface. For these reasons, claim 4 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claim 5 is dependent on claim 1 and further recites that the etchant source gas includes chlorine. The Examiner failed to point out anything in Hills et al. that discloses a chlorine etch. If the "pedestal focus ring" (114), the "gas distribution plate" (170), the "gas distribution ring" (172) and their components were made of pure aluminum it would not be obvious to use the chlorine etch of Abraham or Abraham et al. with these pure aluminum components, which would cause the etching of these components. For these reasons, claim 5 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claims 6 is dependent on claim 5. For this reason claims 6 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claim 8 is independent on claim 1. For this reason, claim 8 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claim 10 is dependent on claim 1 and further recites that material of the sacrificial substrate holder is selected to form substantially volatile byproducts when etched by the plasma. Since Hills et al. does not disclose etching the ring (124), the formation of volatile byproducts is not disclosed. In addition, the Examiner failed to point out anything in Abraham or Abraham et al. that teaches having the recited ring and that the recited ring is a sacrificial ring would form volatile byproducts. For these reasons, claim 10 In addition, the Examiner failed to point out anything in Abraham or Abraham et al. that teaches having the recited ring and that the recited ring is a sacrificial ring made of pure aluminum.

Claim 26, as amended, is dependent on claim 25 and further recites that the substantially pure metallic upper surface is essentially aluminum. An anodized aluminum surface is not essentially aluminum. In addition, the Examiner failed to point out anything in Abraham or Abraham et al. that teaches having the recited ring and that the recited ring is essentially aluminum.

Claim 27 is dependent on claim 26 and further recites that the etchant source gas includes chlorine. The Examiner failed to point out anything in Hills et al. that discloses a chlorine etch. If the "pedestal focus ring" (114), the "gas distribution plate" (170), the "gas distribution ring" (172) and their components were made essentially of aluminum it would not be obvious to use the chlorine etch of Abraham or Abraham et al. with these pure aluminum components, which would cause the etching of these components. For these reasons, claim 27 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claim 28 is dependent on claim 27. For this reason, claim 28 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claims 29 is dependent on claim 25. For this reason, claim 29 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claim 32 is dependent on claim 31. For this reason, claim 32 is not made obvious by Hills et al. in view of Abraham and Abraham et al.

Claims 9 and 30 have been amended to recite that the metal is 99.999% pure aluminum, which is not made obvious by the cited art.

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at (831) 655-2300.

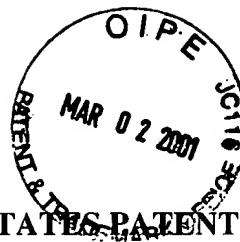
If any fees are due in connection with the filing of this Amendment, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-0388 (Order No. LAM1P061).

Respectfully submitted,
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PATENT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re the application of: PATRICK ET AL.)
Application No.: 08/925,985)
Filed: September 9, 1997)
For: APPRATUS FOR IMPROVED)
ETCH UNIFORMITY AND)
METHODS THEREFOR)

Group Art Unit: 1746
Examiner: Markoff, A.
Attorney Docket No.:
LAM1P061/P0318

#16
3-15-01

DECLARATION UNDER 37 CFR § 1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Roger Patrick, declare as follows:

I am a co-inventor in the above-identified patent application with Phillip L. Jones.

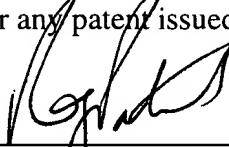
I am a citizen of the United Kingdom I am currently employed by LAM Research Corporation.

I have reviewed the patent US. Patent No. 5,685,914 to Hills et al. Hills et al. teaches an anodized aluminum supporting annulus 124. I believe that the anodized aluminum supporting annulus taught in Hills et al. would not make obvious the sacrificial pure aluminum upper surface claimed in my invention, since anodized aluminum is difficult to etch and therefore would less likely form a sacrificial upper surface when compared to a substantially pure aluminum upper surface that may have undergone a small amount of oxidation.

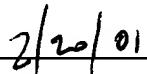
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements are made with the knowledge that willful false

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statements and the like so made are punishable by fine or imprisonment, or both (under Section 1001 of Title 18 of the United States Code), and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Roger Patrick


Date
